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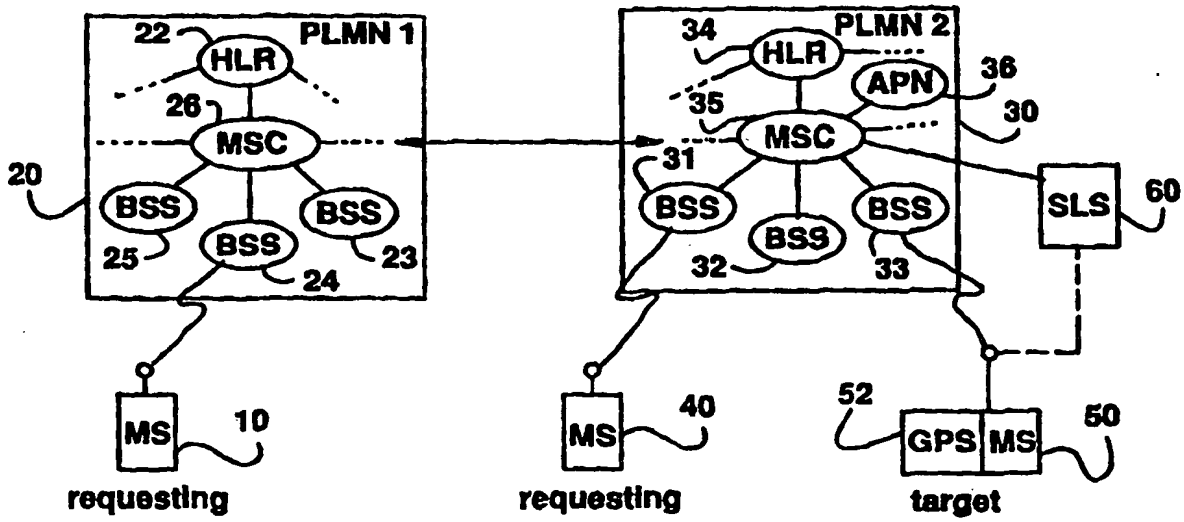
7 May 1998 (07.05.98)

(54) Title: METHOD AND APPARATUS FOR COMMUNICATING INFORMATION ON MOBILE STATION POSITION WITHIN A CELLULAR TELEPHONE NETWORK



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(57) Abstract

Position information regarding a mobile station is determined and provided upon request. In one situation, mobile station position is determined in response to a request from another mobile subscriber (10, 40) and displayed (226) on the requesting mobile station display. Mobile station position is also determined in response to a request from a land line user (70) and provided through either a synthesized voice communication (233), a data message (225) or a facsimile message (237). Mobile station positions are further provided in response to law enforcement (320) and other public service entity (422) requests. This information is useful in tracking a mobile station (312, 412) either during a call or when the mobile station is idle. In another instance mobile station location information is used to insure routing (434) of emergency (911) calls (424) to the proper public safety answering point (422). The system further has the capability of being programmed with certain response criteria applicable to the determination of mobile station position. Such criteria include accuracies, confidence factors, periods between location reports, and location determination technique.

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BNSDOCID: <WO___9800988A3_I_>

INTERNATIONAL SEARCH REPORT

Inter ›nal Application No
PCT/US 97/11656

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04Q7/38

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04Q G08G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 43 21 418 A (DEUTSCHE AEROSPACE) 5 January 1995 see page 4, line 68 - page 10, line 37	1-25
X A	WO 96 15643 A (ERICSSON TELEFON AB L M) 23 May 1996 see page 41, line 15 - page 44, line 24	13-25 1-12
X A	US 5 327 144 A (STILP LOUIS A ET AL) 5 July 1994 see column 5, line 56 - column 6, line 21 see column 8, line 23 - column 9; claims 1,12,13,22,23,25	13-25 1-12
A	WO 94 01978 A (RIMER NEIL ALEXANDER ;GUTIERREZ PETER (GB); FIORENTINO MARCO ALBER) 20 January 1994 see page 13, line 7 - page 18, line 34	1,9-11, 13

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
17 February 1998	13/03/98

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Janyszek, J-M

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INTERNATIONAL SEARCH REPORT

Inter nal Application No
PCT/US 97/11656

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 208 756 A (SONG HAN L) 4 May 1993 see abstract see column 3, line 12 - column 5, line 34	1,7, 13-24
A	EP 0 689 368 A (PTT GENERALDIREKTION) 27 December 1995 see column 6, line 347 - column 40	5,8,9
A	WO 94 29995 A (MOTOROLA INC) 22 December 1994 see page 3, line 9 - page 5, line 11 see page 9, line 3 - page 10, line 31 see page 19, line 6 - page 20, line 20	26
A	WO 96 19908 A (MOTOROLA INC) 27 June 1996 see page 5, line 32 - page 7, line 4	26
P,X	WO 96 25830 A (EUROPOLITAN AB ;EKSTROEM TOMMY (SE)) 22 August 1996 see page 9, line 3 - page 16, line 6	7-25
E	WO 97 24010 A (BELL COMMUNICATIONS RES) 3 July 1997 see page 6, line 10 - page 8, line 17 see page 15, line 14 - page 16, line 4 see page 20, line 8 - line 22	1-25

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 97/ 11656

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. claims 1-25:
Method for routing position information on a target mobile subscriber roaming through a mobile network to and from a requesting second subscriber
2. claims 26-36:
Method for emergency call processing for a roaming mobile subscriber

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos..

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

information on patent family members

Inter ɔnal Application No
PCT/US 97/11656

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 4321418 A	05-01-95	AU 7185994 A	17-01-95
		WO 9501066 A	05-01-95
		EP 0705524 A	10-04-96
		FI 956181 A	21-12-95
		NO 955264 A	22-12-95
WO 9615643 A	23-05-96	AU 3942395 A	06-06-96
		CA 2204992 A	23-05-96
		SE 9701723 A	08-07-97
US 5327144 A	05-07-94	AU 677292 B	17-04-97
		AU 6094094 A	12-12-94
		AU 6820694 A	12-12-94
		BR 9406463 A	30-01-96
		CA 2161333 A	24-11-94
		EP 0700525 A	13-03-96
		JP 8508381 T	03-09-96
		WO 9427160 A	24-11-94
		WO 9427161 A	24-11-94
		US 5608410 A	04-03-97
		ZA 9401019 A	25-08-94
WO 9401978 A	20-01-94	US 5432841 A	11-07-95
		EP 0603390 A	29-06-94
US 5208756 A	04-05-93	AU 1343692 A	27-08-92
		WO 9213284 A	06-08-92
EP 0689368 A	27-12-95	AT 153206 T	15-05-97
		AU 2174595 A	04-01-96
		BR 9508091 A	12-08-97
		CA 2152215 A	21-12-95
		WO 9535635 A	28-12-95
		CN 1128476 A	07-08-96
		CZ 9603513 A	14-05-97
		DE 59402759 D	19-06-97
		FI 965078 A	17-12-96
		HU 76397 A	28-08-97
		JP 8265843 A	11-10-96
		NO 965315 A	18-02-97

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inter onal Application No
PCT/US 97/11656

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0689368 A		PL 317643 A	14-04-97
		SG 34235 A	06-12-96
		SI 9520064 A	30-04-97
		SK 161396 A	05-11-97
		ZA 9505091 A	10-04-96
WO 9429995 A	22-12-94	AU 666279 B	01-02-96
		AU 7095594 A	03-01-95
		CA 2139514 A	22-12-94
		MX 9404431 A	31-01-95
WO 9619908 A	27-06-96	US 5602901 A	11-02-97
		AU 3895995 A	10-07-96
		EP 0799555 A	08-10-97
		FI 972614 A	18-06-97
		GB 2309617 A	30-07-97
		NO 972758 A	16-06-97
WO 9625830 A	22-08-96	AU 4737396 A	04-09-96
		CA 2210723 A	22-08-96
		EP 0809918 A	03-12-97
		FI 973342 A	14-08-97
		NO 973748 A	14-08-97
		SE 9500569 A	17-08-96
		SE 9502976 A	17-08-96
WO 9724010 A	03-07-97	AU 5252896 A	17-07-97